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ABSTRACT

A THOUSAND POINTS OF LIGHT: INTEGRATING OPERATIONAL FIRES INTO CAMPAIGN DESIGN by MAJ Robert W. Hadden, USA, 57 pages.

The conduct of war throughout its evolution has become increasingly complex, especially given the range, accuracy, and lethality of modern weapons systems. In order to maximize the contributions of firepower within the overall operational concept, operational fires must be a fully integrated component of campaign design. Doctrinally, there is no designated individual or associated staff section to assume responsibility for the planning and execution of operational fires. Draft joint doctrine suggests that responsibility for this may be given to the component commander with the preponderance of fire support assets. Joint doctrine also states that a Joint Targeting Coordination Board, operating as a joint fire support element, may be organized to coordinate the myriad of fire support functions at the operational level. This doctrinal guidance relegates this vital component of campaign design to, at best, an ad hoc organization.

The study proposes to answer the question: Is a joint fire support element required to integrate operational fires within a campaign plan? Classical and contemporary theory are first examined discussing the relationship of operational fires to operational art. Next, several major operations are examined tracing the evolution of operational fires emphasizing the fire support coordination processes--the disaster at Kasserine Pass in North Africa, Operations STRANGLE and DIADÉM in Italy, Operations OVERLORD and COBRA in Normandy, and Operation STRANGLE in Korea, and the birth of a unified command structure in MacArthur's Far East Command. Existing operational joint doctrine and relevant service doctrine are examined for its sufficiency. The evidence is filtered through a lens provided by the imperatives of joint fire support: command involvement, mission focus, unity of effort, aggressive intelligence, and timely effect.

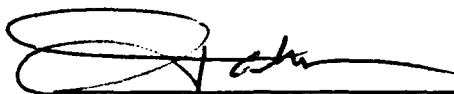
The study concludes that planning for the integration of operational fires is best accomplished by a permanent joint force fire support element (JFFSE). The JFFSE fully develops the JFC's guidance and intent for the desired impact of operational fires and recommends to the JFC how attack and intelligence resources should be allocated. Through the use of a decision support template, and working closely with the J-2 and J-3, the JFFSE determines what the fires are to achieve and when the fires will most likely be employed. This information is passed to the Joint Force Air Component Commander (JFACC) who is vested with the authority to direct and coordinate all efforts concerned with the application of operational fires. Technological developments in delivery means, precision munitions, command and control, and accurate target acquisition, demonstrate that operational fires may move from a supporting role to become a more decisive element of combat power as prophesied by the Airland Battle-Future concept.

SCHOOL OF ADVANCED MILITARY STUDIES
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I. Introduction

There is little doubt of the assertion that the conduct of war throughout its evolution has become increasingly complex. This is especially true given the increased range, accuracy, and lethality of modern weapon systems. A contemporary lesson can still be drawn from the Battle of Crecy in 1346, when English archers using the longbow with its 37-inch arrow, defeated the combined arms army of the day, crossbow-wielding Genoese infantry and mounted French knights. English bowmen rapidly fired long-range (500 yards) missiles which prevented closure between the forces. The accuracy and volume of fire disrupted the French advance, wounding horses and creating confusion among the retreating horsemen and fleeing crossbowmen. Conditions were set for decisive maneuver as the English dismounted men-at-arms seized the opportunity to surge forward and completely rout the superior French forces. The importance of the 14th century longbow, in the march of technology, was the contribution of unrivaled range, accuracy, and volume of fire.¹ Making a conceptual leap to the 20th century, operational fires are capable of launching accurate, precision or area, standoff munitions. Their effects can isolate the battlefield and wreak havoc on massed enemy formations, thereby setting the conditions for decisive ground maneuver.

For purposes of this study, operational fires are defined as:

...the application of firepower, often the product of coordinated joint effort, directed by the operational commander as a fully integrated component of his campaign (operational concept), with design and intent to achieve a specified, high impact, operationally significant result through focused intelligence and targeting and effective massed and/or precision fires.²

Simplified, operational fires are the application of firepower to achieve a significant impact on the conduct of a campaign or major operation.

Traditionally, operational fires were largely the province of theater air forces. The increasing range, accuracy, and lethality of surface delivery means, such as sea-launched cruise missiles and the Army Tactical Missile System (ATACMS), however, promise a corresponding increase in the operational employment of such systems. The modern battlefield is three-dimensional. Air, land, and sea power cannot be measured in isolation nor employed independently. Used together, they become force multipliers.

TRADOC Pam 11-9, Blueprint of the Battlefield, includes operational fires as an independent operational operating system--one of the major functions performed by joint operational forces for successfully executing campaigns and major operations in a theater of operations. Additionally, TRADOC Pam 11-9 emphasizes that operational fires "are a separate component of the operational scheme and the coequal of operational movement and maneuver, but maneuver and fires must be integrated."³ Thus, operational fires are the application of firepower as a component of a fully integrated campaign plan.

Both theory and history attest to the importance of operational fires in campaign design. Doctrinally, however, there is no designated individual or associated staff section to assume responsibility for the planning and execution of operational fires. Draft joint doctrine suggests that responsibility for this may be given to the component commander with the preponderance of fire

support assets.⁴ Joint doctrine also states that a Joint Targeting Coordination Board, operating as a joint fire support element, may be organized to coordinate the myriad of fire support functions at the operational level.⁵ This doctrinal guidance seems inadequate for the viability and execution of the concept of operational fires and has relegated this vital component of campaign design to, at best, an ad hoc organization.

The monograph proposes to answer the question: Is a joint fire support element required to integrate operational fires within a campaign plan? The study begins with a theoretical discussion of the relationship between operational fires and operational art. This will be followed by an examination of the evolution of the air-ground support relationship since World War II, with particular emphasis on the fire support coordination processes. Next, existing operational joint doctrine and relevant service doctrine will be examined for its sufficiency. The evidence will be filtered through a lens provided by the imperatives of joint fire support as outlined in JCS Pub 3-09, Doctrine for Joint Fire Support Operations: command involvement, mission focus, unity of effort, aggressive intelligence, and timely effect.⁶ The imperatives will form the criteria by which theory, doctrine, and practice will be synthesized to draw meaningful conclusions and implications to enhance the integration of operational fires into campaign design. The effects of operational fires are like a thousand points of light viewed from a distance--each point representing a separate tactical action, extended over time and space, to achieve an operationally significant result.

II. The Concept of Operational Fires

Even without the ability to foresee the profound influence of contemporary technology on the conduct of war, classical military theorists offer insights into the application of firepower. Writing in the 4th century B.C., Sun Tzu made several observations pertinent to the application of firepower: "There are five methods of attacking with fire. The first is to burn personnel; the second, to burn stores; the third, to burn equipment; the fourth; to burn arsenals; and the fifth, to use incendiary missiles."⁷ Of course, the modern concept of firepower and Sun Tzu's notion of attacking with fire are markedly different, but the choice of targets and the reference to incendiary missiles are of considerable interest.⁸

Carl von Clausewitz, in On War, recognizes similar utility in attacking and destroying infrastructure and logistics, aimed primarily at the destruction of enemy warfighting capability.⁹ He is quick to caution that: "Such [activities] should always be regarded merely as means of gaining greater superiority, so that in the end we are able to offer an engagement to the enemy when he is in no position to accept it."¹⁰ Therefore, attacks on these sorts of targets will not of themselves be decisive. They establish the conditions leading up to a decisive battle. The key is to identify the enemy's source of strength or balance--his center of gravity. Clausewitz states that in most cases, the enemy center of gravity is the enemy's armed forces: "...of all the possible aims in war, the destruction of the enemy's armed forces always appears as the

highest.¹¹ If the operational aim of the war is to destroy the main enemy force, then the concentration of superior combat power against the point where his force is most heavily concentrated and least able to react will achieve decisive success. This becomes the essence of operational art.

Operational art is "the employment of military forces to attain strategic or operational objectives in a...theater of operations through the design, organization, and conduct of campaigns and major operations."¹² It is inherently joint in nature. Operational art translates theater strategy into operational and, ultimately, tactical action.¹³ It is at the tactical and operational levels of war that combat power is generated. In generating combat power, leaders must convert potential resources into actual combat capability. Success on the battlefield results from the effective application of overwhelming combat power at the decisive point and time. Combat power measures the effect created by combining maneuver, firepower, protection, and leadership.¹⁴ Of these elements, two are particularly critical in planning: maneuver and firepower.

Through maneuver, forces attempt to gain the advantage of position before battle and exploit tactical successes to achieve operational results. This advantage results in attaining surprise, seizing the initiative and momentum, achieving psychological shock and moral dominance, or a combination of these elements. The key to maneuver is concentration of combat power at the critical time and place enabling numerically inferior forces to defeat larger ones.¹⁵ Maneuver, however, is not exclusive of firepower. The two

are closely related and complement one another. Firepower is the "destructive force essential to defeating the enemy's ability and will to fight. Firepower facilitates maneuver by suppressing the enemy's fires and disrupting the movement of his forces."¹⁶ In essence, fires are used to create opportunities for maneuver, and maneuver exposes enemy forces to the concentration of fires for exploitation.¹⁷ There must be some operational method to keep these two dynamics of combat power in balance and unified in purpose--a campaign plan.

A campaign plan translates strategic guidance into operational direction for subordinates. "It provides broad concepts for deployment, operations, and sustainment to achieve strategic objectives in a theater of operations. It synchronizes air, land, and sea efforts into a cohesive and synergistic whole," thereby concentrating efforts in space and time to destroy the enemy center of gravity.¹⁸

Extending the classical theorists' views of the application of firepower over broad dimensions of space and time, we turn to more contemporary thought for insights into how emerging technology in operational fires might best be employed to achieve its fullest potential. The pioneers of this thought endured the frustration of the static warfare that evolved during World War I. They sought to solve the problem of how to restore maneuver to the battlefield or how to win in spite of apparent stalemate. The answer was found in the vertical dimension--the innovation of air power as a means of delivering firepower.

B.H. Liddell Hart, a veteran of the trenches of WW I, foresaw

the use of air power, the third dimension of warfare, as a way to jump over the opposing army, thereby disposing of his shield.¹⁹ The stalemate could be averted by the indirect approach, Liddell Hart's theoretical concept of weakening the enemy's resistance before overcoming it. An advocate of firepower, as well as maneuver, he believed that it was "firepower that arrives at the right time and place, that counts in war--not manpower."²⁰ The application of firepower was most efficiently accomplished by the "use of aircraft in fighting cooperation with troops, as an indirect augmentation of their hitting power."²¹ Finally, with great prescience, he envisioned the use of aircraft in an interdiction role attacking "wherever the enemy forces are assembled in density--as when moving to attack" or against his "long narrow arteries and concentrated sources of supply."²²

Another theorist and practitioner who was frustrated with the static nature of WW I was Giulio Douhet. He envisioned the potential of air power going far behind the fortified lines of defense without first having to break through them, attacking civilian populations, and destroying the enemy's war-making potential, which had previously operated in relative safety and peace. He postulated that air power alone could destroy the enemy's will to resist, especially, if brought to bear in a short period of time: "Inflict the greatest damage in the shortest possible time."²³

Several of Douhet's theories found their way into early U.S. Army Air Corps doctrine:

The most efficient way to defeat an enemy is to destroy,

by means of bombardment from the air, his war making capacity; to identify by scientific analysis those particular elements of his war potential the elimination of which will cripple either his war machine or his will to continue the conflict...they should be attacked by large masses of bombardment aircraft flying in formation, at high altitude, in daylight, and equipped with precision bombsights that will make possible the positive identification and destruction of "pin point" targets...²⁴

In one of the first glimpses of the striking potential of air power, the Spanish Civil War in 1938, Ferdinand O. Miksche described the impact that absolute air superiority has at the operational level. He observed how the air arm could isolate the field of battle from the rear, protect the flanks, and give cohesion to separate and isolated actions. Further, he foresaw the air arm complementing the action of massed armored forces, and giving greater depth and flexibility to indirectly delivered firepower in support of maneuvering forces.²⁵

Advancing such theories to the present, several contemporary practitioners of operational art offer their views on the impact of operational fires. General Hans Henning von Sandrart, Commander, Allied Forces Central Europe, states:

At the operational level, primary emphasis is on disrupting the plans of the enemy higher commands and on carrying through our own operational intent. Various measures serve this aim, such as preventing the enemy from bringing up fresh forces as planned and inflicting substantial losses on troops that are ready to be introduced in breakthrough sectors. In addition, command and logistics need to be hampered, thus reducing their effectiveness.²⁶

Concerned primarily with a Soviet threat, it is his view that the battle in depth is integral to the planning and conduct of operations by ground force commanders. He concludes that within the context of the campaign as a whole, attacking the enemy in

depth with operational fires is not an independent action, as there can be no isolated land or air war.²⁷

Former Supreme Allied Commander Europe, General Bernard Rogers, asserted that the application of firepower has profound influence at the operational level of war, especially in light of emerging technologies:

...[technology] makes it possible not only to acquire mobile targets deep in the enemy rear and to process target data in real time, but through the use of terminally guided submunitions, to attack these moving targets successfully, as well.²⁸

Operationally significant tasks may be accomplished through the application of firepower, exploiting the new technologies cited by General Rogers. To ensure unity of effort, however, such targets must be attacked effectively within the overarching operational concept of the campaign plan.

As previously discussed, the concept of operational fires has been proposed by the Army as one of several operational operating systems. However, the term itself has not been adopted by the other services and appears nowhere in contemporary joint doctrine. This reluctance to accept the term does not exclude the acceptance of the concept of operational fires. Draft joint doctrine, JCS Pub 3-09, introduces the term joint fires in lieu of operational fires, yet they are similarly defined. Joint fires also provide the means to apply firepower at the operational level:

Joint fires consist of interdiction and its subset Follow-on Forces Attack (FOFA), joint fire support, and service fire support. Interdiction is executed at both the strategic and operational levels of war and may have tactical effects. Joint fire support is executed at both the operational and tactical levels of war.²⁹

The primary difference between joint fires and operational fires lies in the impact the fires are intended to achieve. Since WWII, operational fires have focused largely on four general tasks: isolating the battlefield by the interdiction of uncommitted enemy forces and sustaining support; facilitating maneuver to operational depths by creating an exploitable gap in the tactical defense; protecting portions of the area of operations when economy of force is necessary; and destroying critical functions and facilities having operational significance.³⁰ Whereas the focus of operational fires is to achieve a decisive impact on the conduct of a campaign, joint fires are executed at the strategic, operational, and tactical level. In light of this, operational fires appear to be a subset of joint fires.

Having reviewed military theory and the thoughts of several contemporary practitioners, we will look at several historical vignettes. These examples offer insights into the nature of operational fires and examine the coordination processes which led to the success or failure of their impact on the overall campaign.

III. The Evolution of Operational Fires

It is impossible to discuss the evolution of operational fires without discussing the evolution of the air-ground relationship. The pre-WWII air power doctrine, encapsulated in FM 31-35, Air-Ground Operations, specified that Army Air Corps aviation assets were to be divided into a series of air support commands. Each air support command was composed of attack, fighter, bomber, and

observation aircraft, and was tied to a specific ground unit, usually a corps. Ground commanders believed they should have their own organic air assets to act as an air umbrella to provide continuous protection from aerial attack for each Army formation.³¹ Numerous ground commanders shared BG Paul M. Robinett's opinion of the air-ground relationship during early American participation in North Africa:

I have talked with all ranks possible and am sure that men cannot stand the mental or physical strain of constant aerial bombing without feeling that all possible is being done to beat back the enemy air effort. News of bombed cities or ships or ports is not the answer they expect. They know what they see and at present there is little of our air to be seen.³² [Letter to GEN George C. Marshall]

Thus, the air umbrella served to enhance morale, as well as provide protection. The defensive nature of the air umbrella reduced the flexibility of air power and denied the ability to concentrate its fires on crucial targets. The Army and its Air Corps entered WWII with the ineffective doctrine prescribed by FM 31-35. It would take a disaster of immense proportions to disprove the concept of decentralized control. That disaster occurred in mid-February 1943 at Kasserine Pass.

North Africa--Disastrous Proving Grounds

In North Africa from 1942 to 1943, air assets were tied to individual corps, with the corps commander directing his own air. In fighting the battle, these assets were jealously guarded by the corps commander, resulting in poor combat power generation for the force as a whole. The parceling of air power allowed the German Luftwaffe to gain control of the air as the corps employed tactical air only in the close air support role, thus ignoring air

superiority and air interdiction. During Rommel's bold offensive to penetrate the Allied lines at the Kasserine Pass in Tunisia and push to the Mediterranean coast, German air concentrated its attacks against small formations of U.S. and British fighters who tried in vain to maintain umbrellas over their respective ground force. Allied air losses were prohibitive. Ground forces suffered heavy casualties in maintaining control of the pass without effective air support.³³ Had air power been more flexible and centrally controlled, perhaps Rommel could have been stopped much sooner.

This episode served as a catalyst for change. The issues raised by the debacle of Kasserine Pass were heavily discussed at the Casablanca Conference, held in early 1943. Heralding a major doctrinal change, the new concept of operations was laid out in FM 100-20, Command and Employment of Air Power.

FM 100-20 was the seminal document outlining the air-ground relationship which exists in part even to this day. Often referred to as the Declaration of Independence of the Army Air Corps, FM 100-20 stated that "land power and air power are coequal and interdependent forces; neither is an auxiliary of the other."³⁴ It recognized that decentralized control and decentralized execution were a recipe for disaster. As a remedy, it mandated the control of available air power through the air force commander to exploit its inherent flexibility by delivering a decisive blow at the proper time and place.³⁵

FM 100-20 also established mission priorities for the tactical air force.³⁶ The first priority was to gain the necessary degree

of air superiority by attacking enemy aircraft in the air and on the ground, as well as those enemy installations required for the support of those aircraft. Clearly, air superiority was a prerequisite which allowed the ground commander the necessary freedom of action to prosecute the ground battle. The second priority was to prevent the movement of enemy troops and supplies into the theater of operations. We refer to this today as air interdiction (AI) which is accomplished through the application of operational fires. The third priority was to conduct a joint effort with the ground forces to gain objectives in the close battle area--close air support. Coequal status did not relieve air forces of the responsibility of supporting ground forces; it integrated air and ground operations into a single campaign plan. This new doctrine first proved effective along the Gustav Line in Italy in early 1944.

Italy and Normandy--Forging the Air-Ground Relationship

Allied ground forces were exhausted by three failed attempts to break through the strong German defenses. Once air superiority was gained, however, Allied Air Forces unilaterally embarked on an aggressive interdiction campaign, Operation STRANGLE. Its purpose was to reduce the enemy's flow of men, materiel, and supplies to committed forces, rendering them combat ineffective and causing them to withdraw. The operation was solely conceived, designed, and executed by the Allied air staff without coordination with the ground forces.³⁷

After an intense effort, impressive results were achieved. Rail capacity fell from 80,000 tons per day to 4,000, well below

what the Germans needed to resist an intensive offense. The operation continued for approximately four weeks, until it became apparent that the planners' original objective was too optimistic. The Germans could survive on 4,000 tons a day, as long as there was no Allied ground effort causing them to increase consumption of their dwindling supplies.³⁸ Unless the air interdiction effort was complemented by ground attack, the Germans could endure deprivations and would not withdraw. Thus, on 25 April 1944, the planners issued a new directive which orchestrated the joint effort of both ground and air forces, Operation DIADEM.³⁹

Operation DIADEM began on 11 May 1944. It immediately caused critical problems for the Germans. Most notable among them was the German commander's inability to rapidly shift ground forces laterally along the line in the face of Allied interdiction. Rail systems were damaged placing a greater demand on scarce motor transport assets, normally used to provide tactical mobility for German ground forces, to haul supplies. Roving fighter bombers, unchallenged by enemy counterair or air defenses, were free to attack German convoys with impunity. The heavy losses caused German commanders to reduce the risk of air attack by moving only at night. Fewer and fewer supplies and replacements reached the forward units, rendering them unable to hold against Allied ground attacks. Units began to withdraw from the Gustav Line under the pressure of both air interdiction and ground exploitation. The withdrawal rapidly turned into a pursuit, ending with the liberation of Rome.⁴⁰

The interdiction campaign in Italy was a success because the

Allies had air superiority and were able to keep constant pressure on the lines of communication. By conducting a joint effort, the Allied ground and air forces were able to accomplish, in just over three weeks, what they could not individually achieve in the previous six months.⁴¹ The concept of conducting an offensive campaign which effectively integrates air interdiction with a ground offensive is of such importance as to merit another example: the Allied invasion of Normandy, Operation OVERLORD, 6 June 1944.

Prior to the invasion, air superiority had been achieved over France. The air power priority then shifted to air interdiction. Initially, the air interdiction focus was on the rail system, to ensure that "enemy forces attacking the bridgehead did not increase at a more rapid rate than the Allied forces defending and extending it."⁴² Later in the interdiction effort, the focus shifted to destroying bridges, with emphasis on those bridges across the Seine River. Largely due to Operation FORTITUDE, the deception plan for the invasion, German reserves were positioned inland where they presumed they could move quickly against any landing within 24 to 48 hours.

As it turned out, air interdiction was successful in delaying the movement of German reserves to Normandy. The destruction of the rail system west of Paris and the bridges across the Seine and Loire Rivers, forced German units to make long road marches with many detours while under continuous aerial attack. German commanders virtually abandoned daylight road movement, restricting movement to the short, six-hour summer nights, greatly inhibiting their ability to concentrate enough combat power to stem the

expanding lodgment. Field Marshal Erwin Rommel, responsible for defending the coastline from Brittany to the Netherlands, best summarized the impact of air interdiction in Normandy:

During the day, practically our entire traffic--on roads, trucks in open country--is pinned down by powerful fighter-bomber and bomber formations, with the result that the movement of our troops on the battlefield is almost completely paralyzed, while the enemy can maneuver freely. Every traffic defile in the rear areas is under continual attack and it is very difficult to get essential supplies of ammunition and petrol up to the troops.⁴³

Once again, fires in the form of air interdiction, achieved an operational level impact on the conduct of the campaign by isolating the battlefield from reinforcing troops. A toehold on the European continent had been secured.

Unfortunately, the terrain immediately beyond the initial bridgehead line effectively negated the American advantages of tactical mobility and firepower. The hedgerows of the bocage region and flooded marshlands of the Contentin Peninsula, coupled with the stubborn German defenders who used the restrictive nature of the terrain to their advantage, slowed GEN Omar Bradley's advance. He desperately sought a solution to the developing stalemate. The key to attaining his freedom to maneuver lay in the use of operational fires.

Bradley's plan, Operation COBRA, was to use saturation bombing to blast a three-mile hole in the German defenses opposite the 12th Army Group's front, and rapidly penetrate the defenses with MG J. Lawton Collins' VII Corps. Joint planning was accomplished between the 12th AG and the 9th Tactical Air Command (TAC). Details were worked out and a bomblane was established as a reference point

along the St Lo-Perriers road. A minimum safe distance to friendly troops was also established, however, it was not mutually agreed upon. The air force believed that they could not assure troop safety within 3000 yards. Bradley refused to withdraw his troops further than 1250 yards behind the target area and strongly recommended that the bombers attack parallel to the front. The aerial bombardment consisted of 350 fighter bombers who would strike for 20 minutes, followed by 1,800 heavy bombers who would saturate an area 2500 yards to the south side of the road for one hour. This would be followed by another 20 minute aerial bombardment by fighter bombers to cover the movement of the ground forces to the line of departure.⁴⁴

The air effort was supplemented by a massive artillery concentration. VII Corps Artillery was reinforced by 35 artillery battalions from First Army. Their purpose was to conduct preparatory fires and assist in the neutralization of enemy strongpoints which survived the carpet bombing.⁴⁵

The operation commenced on 24 July 1944; however, it had to be curtailed due to bad weather. Visibility was so poor over the target area that few of the first formations dropped their ordnance. One bomber accidentally released its load early and those aircraft following him in formation did likewise, dropping 2000 yards north of the road. Fratricide was the result: 25 soldiers killed and 131 wounded.⁴⁶

Contrary to GEN Bradley's desires, the heavy bombers approached perpendicular to the target area. It was too late to change their bombing plan prior to the second attempt on 25 July,

when the weather cleared enough to allow COBRA to be fully executed. On the 25th, several formations again released their bombs prematurely, resulting in friendly casualties. In fairness to the bomber crews, it must be noted that after the first formations passed, the target area became obscured with smoke and dust and German air defenses put up heavy flak in anticipation of another attack. The casualty toll for the second attempt was an additional 86 soldiers killed and 359 wounded.⁴⁷

Front-line divisions, stunned by the inaccurate bombs, took over an hour and a half to reorganize and begin limited movement through the gap. VII Corps did not begin exploiting the fires with full-scale maneuver until the next day. It seemed remarkable to those who witnessed the fury and devastation of the carpet bombing that the Germans were able to offer resistance with dug-in tanks and infantry. It was not until 28 July that Bradley's forces succeeded in penetrating the German defenses and seized their objectives. Although disappointed at the loss of American lives, Bradley stated his conclusions in a letter to Eisenhower:

This operation could not have been the success it has been without such close cooperation of the Air. In the first place, the bombardment which we gave them last Tuesday [25 July] was apparently highly successful even though we did suffer many casualties ourselves. The cooperation of Quesada's IX TAC Air Command has been outstanding.⁴⁸

Notwithstanding difficulties in execution, this operation illustrates several of the critical elements of operational fires. It was a major operation, involving the fires of joint forces to achieve a single operationally significant objective. It was planned and synchronized at a level of command exercising

operational direction, the 12th (US) Army Group. The conclusion of a post-war study, however, cautioned that the employment of air power in saturation bombing directly in front of ground troops "should be made only after decision by the Supreme Commander; and the decision to employ heavy bombers should be made only if "campaign winning" [original quotation marks] as opposed to "battle winning" [original quotation marks] results are expected."⁴⁹ Operation COBRA was justified by this criteria.

The final example of WW II, which illustrates a particular aspect or capability of operational fires, is LTG George S. Patton's drive across France. Following the breakout from Normandy, Patton's 3d Army led a rapid pursuit across France, quickly outdistancing himself from his sustainment base and exposing his flanks. Air assets conducted armed reconnaissance to stay ahead of 3d Army's advancing armored columns. This was done to cut off enemy lines of retreat and destroy German tanks and infantry in flight, as well as deny them the ability to rest, regroup, or maintain secrecy of movement. Additionally, Patton gave the 19th TAC the mission to guard the 3d Army flank along the Loire and protect his LOCs.⁵⁰

Thus ends our look at WWII for insights into the execution of operational fires. A post-war study led by GEN Omar Bradley, Effect of Air Power on Military Operations Western Europe, evaluated the efforts of 9th Tactical Air Force (TACAF) for types of missions and numbers of sorties from 6 June 1944 to 8 May 1945. A complete tabulation of their findings is located in Annex A. Of particular interest are the figures which show the overall

apportionment to the various types of missions. For fighter-bombers, 22.8% were used for counter air missions, 44.6% for interdiction, and 32.6% for close air support. For medium bombers, the figures were 5%, 74%, and 21% respectively, providing further testimony as to how the Allies effectively integrated air with ground operations to achieve operationally significant objectives.⁵¹

Korea--The Birth of the Unified Command

The National Security Act of 1947 established the United States Air Force as an independent service. This created a more complex command and support relationship than had developed in WW II. The earliest case study, which illustrates the increased complexity of coordinating joint fires, is provided by the United Nations Command/Far East Command (FEC) under GEN Douglas MacArthur during the Korean War. The Korean War was the first to test the unified military forces of the US.

The invasion of the Republic of Korea by the North Korean People's Army (NKPA) in June 1950 found both US ground and air forces woefully unprepared to deal with the threat. The newly established Air Force had placed budget priority on strategic nuclear systems, neglecting the tactical air forces. In the Far East, very few joint exercises had been conducted to practice the air-ground coordination between the Eighth US Army and the Far East Air Force (FEAF).⁵²

Unfortunately, MacArthur never did develop a true joint theater command structure, which led to problems in the application of operational fires. This shortcoming is identified in the official

USAF history:

...the United Nations Command/Far East Command operated for the first two and one-half years of the Korean war without a joint headquarters. Practically all of the interservice problems which arose during the Korean war could be traced to misunderstandings which, in all likelihood, would never have arisen from the deliberations of a joint staff. In the absence of the joint headquarters staff, the full force of United Nations airpower was seldom effectively applied against hostile target systems in Korea.⁵³

A major lesson from WWII was the need for a joint command structure within a theater of operations. A joint staff combines the expertise of all the services to oversee the ground, air, and naval components, and ensures the most efficient, coordinated, and synchronized employment of resources. MacArthur's General headquarters (GHQ) was essentially an Army staff and had inadequate representation from the Navy and Air Force, inhibiting the coordination of joint forces.⁵⁴

An early attempt at jointness was the creation of the GHQ Targeting Group, which directed air operations and targeting from Tokyo. The Targeting Group was largely staffed by GHQ officers who lacked the experience and depth of knowledge required to perform effective targeting.⁵⁵ Their efforts proved inadequate. As an example, 20 percent of the first 220 targets designated were nonexistent, such as the rail bridges at Yongwol and Machari--towns without railroads at all.⁵⁶ In an effort to improve targeting, the FEC created a Target Selection Committee, composed of high-level and experienced USAF and Navy personnel. The committee did improve performance, but it relied on the FEAF Formal Target Committee, composed of Navy, Fifth US Air Force, and Far East Bomber Command targeting experts. It was not until the summer of 1952 that the

FEC Target Selection Committee was disbanded, and the FEAF Formal Target Committee was granted full authority for air targeting.⁵⁷

Another issue compounding the problems of air-ground coordination was the inability of FEAF to adequately communicate and coordinate with Navy and Marine aviation. Air Force and Navy doctrines were in conflict regarding the control of air assets in a unified theater. LTG George E. Stratemeyer, FEAF Commander, insisted on operational control of all naval aircraft operating out of Japan or flying over Korea. This included targets to be engaged and the area in which naval air was to operate. The Navy was not willing to subordinate its air resources to a theater air component commander (ACC), stating that they had responsibility for control of the sea, sea lines of communication, fleet defense, and the defense of Formosa.⁵⁸ An agreement was reached between FEAF and Naval Forces Far East (NAVFE) which allowed FEAF to have coordination control over Naval aviation. The term was sufficiently vague to allow each service to interpret its meaning to support their own view. The Navy chose to interpret coordination control as applying only to those air operations it agreed to conduct on the Korean peninsula. The Air Force interpreted the term to mean that naval aviation would come under the operational control of FEAF for all naval air operations conducted in and around the peninsula. Though aware of the problem, GEN MacArthur did not step in to resolve it. A compromise was reached between FEAF and NAVFE in which the Navy was given exclusive areas for air operations close to the east coast of Korea, where the carriers operated. This confined naval air power

to a geographic area eliminating the ability to mass firepower, along with air force assets within the theater, and reduced the flexibility to apply maximum airpower on the most important targets.⁵⁹ Additionally, it affected the integration of air interdiction efforts within the overall theater campaign plan.

Early in the Korean War, interdiction missions were highly successful. As UN forces withdrew to the Pusan perimeter, FEAF began an air interdiction campaign to cut the lengthening NKPA supply lines. Together with long LOCs and ground operations, interdiction greatly reduced the fighting capability of the NKPA, and caused extreme shortages of men and supplies. Fighter bombers, virtually opposed by any air threat, conducted armed reconnaissance similar to Normandy.

Interdiction also made a major contribution when the Chinese Communist Forces (CCF) intervened in November 1950. Air interdiction allowed the Eighth Army to break contact and withdraw to prepared defenses by delaying NKPA and CCF forces and denying them freedom of maneuver for a period of three weeks.⁶⁰

Despite these successes, FEAF demonstrated an incomplete understanding of air interdiction by conducting Operation STRANGLE in isolation from ground maneuver from August 1951 to May 1952. The operation was a systematic attempt to isolate the front lines from their supplies. FEAF believed that the operation "would so weaken the enemy that he could easily be routed by an Eighth Army ground offensive, or he would be forced to voluntarily withdraw his troops closer to the Manchurian border to shorten his supply lines."⁶¹ FEAF was unwilling to commit the ground forces

necessary to maneuver and exploit the effects of the interdiction effort. Air efforts alone proved ineffective because the NKPA and CCF were extremely adaptable and could withstand deprivations of supply. Whereas a 16,000 man US division required 500 tons of supplies per day, an NKPA or CCF division of 10,000 men required only 48 tons of supplies.⁶² Therefore, just like Operation STRANGLE in Italy in 1944, static conditions reduced the amount of supplies the enemy needed, provided the time to repair equipment, and allowed the enemy to covertly move small volumes of supplies forward. In light of such poor results, Operation STRANGLE was abandoned. The USAF official history notes: "As was the case in WW II, the best time for an interdiction campaign was when the ground situation was fluid, the fighting intense, and the enemy's logistical needs were greatest."⁶³

These historical examples provide valuable insights concerning the application of fires at the operational level. Most notable among them is the synergism achieved by fully integrating air interdiction efforts with ground maneuver into the overall theater campaign plan. When the two were integrated, as in Operations DIADEM, OVERLORD, COBRA, and Patton's race across France, the results were extremely effective. However, when interdiction or ground maneuver was attempted in isolation, as in Operation STRANGLE (Italy and Korea), the initial attempts by ground forces to break through the Gustav Line, or the Allied breakout from Normandy, efforts proved ineffective and costly.

Another major insight is that a unified command structure should facilitate the integration of all services into a coherent

whole. In the early 1950's, there was no codified joint doctrine. This situation continued through the mid-1980's--ultimately resulting in the firing of MacArthur, chaos in Vietnam, the humiliation of DESERT ONE, and the embarrassment of URGENT FURY. Congress finally intervened and passed the Goldwater-Nichols Defense Reorganization Act of 1986 in an attempt to end forty years of service parochialism and poor interservice cooperation during national emergencies.⁶⁴ Doctrinal friction between the services concerning the use of air power continues to persist. The next section investigates the issue of joint cooperation, focusing on the integration of operational fires into campaign planning.

IV. The Integration of Operational Fires into Campaign Design

Modern weapons and technologically advanced military forces have created a new environment of war at the operational level. At this level, the joint force commander (JFC) does not wage separate air, land, and sea wars. Rather, he orchestrates the operations of air, land, and sea to ensure they are planned, integrated, and coordinated creating a synergistic effect. The commander must ensure that no resource is wasted or overlooked. In most cases, merely employing all available assets is not enough. Most of the assets available to the JFC must be carefully combined with others to realize the full value of combat power. At the operational level, there is a danger of using forces in isolation, forfeiting the synergy resulting from synchronization. Synchronization--the arrangement of military actions in time, space, and purpose,

requires an understanding of the capabilities and limitations of each service component, a mastery of time-space relationships, and considerable ingenuity on the part of the planners.⁶⁵

In the last decade, emerging joint doctrine has clarified service roles and facilitated service cooperation. Yet, some ambiguity remains in the application of operational fires on the future battlefield. JCS Pub 3-09, Doctrine for Joint Fire Support Operations, establishes five imperatives of joint fire support: command involvement, mission focus, unity of effort, aggressive intelligence, and timely effect.⁶⁶ Each of these be used to determine if contemporary joint or service doctrine is adequate to fully integrate operational fires into campaign design.

Command involvement. The JFC's role is essential to the successful application of firepower at the operational level. Through his operational intent, he articulates his vision of both the desired and necessary impact of fires in relation to other military actions. At a minimum, he provides initial guidance to allocate resources, to prioritize targets and objectives, and to establish the authority required to execute effective fires.⁶⁷ The JFC should provide specific guidance pertinent to operational fires: priority of fires for friendly forces to weight the main effort; areas requiring fires to facilitate operational maneuver; critical targets or enemy functions to be attacked by fires; fire sequencing in support with the scheme of maneuver; desired effects of fires; and rules of engagement.⁶⁸

The JFC must establish policies and procedures to promote unity of effort, to ensure the efficient use of intelligence, and

to enhance the timely and effective engagement of targets.⁶⁹

Although the JFC's most important responsibilities are accomplished early in the planning cycle, he must continually reassess priorities and the effectiveness of fires.

One of the best examples of commander involvement is provided by GEN Omar Bradley, Commander, 12th AG, working in close coordination with MG Elwood R. "Pete" Quesada, Commander, 9th TAC. Once the ground forces expanded the beachhead, the 9th TAC staged forward to airfields on the European Continent. It is important to remember that by this time in the campaign, the Allies had achieved air superiority. The Allied strategic bombing campaign kept the German Luftwaffe preoccupied protecting the German industrial base. Therefore, German aircraft were not available in sufficient numbers to have an impact on the landings. European Theater policy was to maintain air superiority over the area forward of the front to a depth of 100-200 miles.⁷⁰ The remainder of Allied air power could be used to provide operational fires in support of the ground campaign.

Bradley and Quesada collocated their command posts and created a de facto joint staff. In planning major operations, the two commanders jointly developed the ground plan and determined the requirements for air cooperation. A daily briefing, attended by Bradley and Quesada, and the G-2, G-3, A-2, and A-3 was held each morning at AG Headquarters. Both commanders were thoroughly briefed on current ground and air operations and the results of the previous day's activities. At about 1930 hours each day, MG Quesada convened an "Evening Target Conference" at the TAC

Headquarters. MG Quesada provided special guidance to his air operations staff based on the morning discussion with GEN Bradley in order to change air taskings or prepare for future operations.⁷¹ These meetings allowed both Bradley and Quesada to remain involved throughout the planning, coordination, and execution of the campaign.

Mission Focus. Through his statement of intent and initial planning guidance, the JFC imparts a mission focus to his staff. While capturing the JFC's intent; the planning, coordination, tasking, and execution of the campaign must focus on the accomplishment of the JFC's objectives and articulated mission purpose.

Operational fires provide an excellent opportunity for the use of mission-oriented command and control. This concept, Auftragstaktik, was originated by the Chief of the Prussian General Staff, Helmuth von Moltke in the mid-19th century. The essence of Auftragstaktik is the subordinate's clear understanding of his superior's intent--what his superior wants to accomplish, leaving the how largely up to the subordinate. As the situation changes, and in the absence of further orders, the subordinate does what he believes is necessary to achieve the superior's objectives.⁷² This is especially critical in the joint arena where the planner may not be of the service who will execute the mission. Mission-type orders allow the application of expertise and initiative at the proper level. A contemporary example of a mission-type order is: "Delay advance of 5th Motorized Rifle Division--prevent battalion or larger size units from crossing the Kansas River from 271200Z

until 281200Z June 1991."⁷³ History also provides some excellent examples.

The initial guidance, what, given to the 9th TACAF Commander to support the invasion of Normandy, was simply to impede the movement of German forces into Normandy, hinder the movement of German forces within Normandy, and impede the withdrawal of defeated German forces from Normandy.⁷⁴ Based on a solid mission analysis, the JFC's objectives were then translated into concrete actions, the how and where, by a joint air and ground staff. The resulting plan is a classic model of how to isolate the battlefield. To reinforce the Normandy beachheads, the Germans had three possible routes. From the northeast, they had to cross the Seine River. From the south, they had to cross the Loire River which formed a barrier 125 miles from the coast. From the east, they had to pass through the gap between Paris and Orleans.⁷⁵ As early as D-90, interdiction attacks on rail facilities began. Beginning D-30, the emphasis shifted to rail and road bridges over the Seine River from Le Havre to Paris. To maintain the deception plan concerning the Allied landing site, attacks on bridges over the Loire River were delayed until D-day. With air superiority achieved and the invasion under way, air force aircraft attacked marshalling yards, rail systems, German troop concentrations, and bridges within the Paris-Orleans gap and across the Loire.⁷⁶

Patton was revered for his ability to give mission orders. In addition to specifying his requirements, such as guarding the 3d Army flank along the Loire, or delaying the enemy, he issued specific guidance to communicate his intent. Patton's first

request to 19th TAC was unique: "Delay the enemy, but do not blow up any bridges."⁷⁷ Since D-day, the 19th TAC had destroyed bridges as their primary technique to slow German movement; however, Patton wanted the bridges intact so his forces could rapidly cross the rivers. Also, during the pursuit, he wanted air power to delay enemy movement from, not to, the battle area. As a result of his guidance, fighter bombers flew armed reconnaissance missions to destroy forces retreating in front of 3d Army. Patton's clear intent provided mission focus and facilitated unity of effort.

Unity of Effort. In a theater of operations, command relationships for the coordination and execution of operational fires must facilitate unity of effort. Relationships, clearly defined and understood by all service components, must contribute to the JFC's established objectives. Additionally, the relationships should facilitate the timely engagement of targets, prevent duplication of effort, and allow for continuous coordination among all agencies involved.⁷⁸ Disunity of effort devalues potential firepower, similar to the parcelling of air assets to corps commanders in North Africa.

JCS Pub 1-02, Unified Action Armed Forces, grants the JFC the authority to organize his staff and assigned forces as he deems necessary to ensure unity of effort and to best accomplish the command's mission. It recommends that the composition of a joint staff be reasonably balanced based on the service composition of assigned forces and the types of anticipated operations. This tailored staff organization helps the commander understand the tactics, capabilities, needs, and limitations of each service

component.⁷⁹ As a combatant commander, the JFC organizes his command structure to "facilitate the efficient integration of the components while optimizing the capabilities of each service."⁸⁰ Normally, the structure consists of land, air, naval, and special operating force components. Because of the need for centralized control of certain air operations that require the joint efforts of different services, the JFC normally designates a Joint Force Air Component Commander (JFACC).⁸¹ The utility of appointing a JFACC is illustrated by MacArthur's weak command structure in the Far East Command (FEC). As previously discussed, MacArthur's GHQ was a pseudo-joint organization, almost entirely manned by army personnel. It did not facilitate a unity of effort among the services, and did not establish clear command relationships. For example, Operation STRANGLE utilized all the theater air assets, but was not centrally controlled by one commander. Fifth Air Force was tasked by FEAF to plan and execute all interdiction operations, yet it did not control the aircraft from Seventh Fleet or the FEAF Bomber Command. The designation of a JFACC with authority to task all air assets regardless of service would have provided more effective control of air operations.⁸²

Usually, the JFACC will be the service component commander who possesses the preponderance of air assets and the command, control, communications, and intelligence capability required for the planning, coordination, allocation, and tasking of all air assets based on the JFC's apportionment decision.⁸³ The JFC may designate the JFACC to assume responsibility for joint counterair operations, joint interdiction, integration of air defense forces, and airspace

control.⁸⁴ For purposes of clarity, the remainder of the study assumes the JFACC to also be the Air Component Commander (USAF).

Although the JFACC derives his authority from the JFC, he does not possess specific command authority, such as operational control (OPCON) of other service assets. This can create some problems in integrating the assets of the other services into a coherent effort. For example, in the Navy's view the purpose of naval aviation is to protect the fleet and to support naval amphibious operations. If naval aviation is directed by the JFC to support ground operations, OPCON does not pass to the JFACC, rather naval air flies in an in-support-of role. This method of employing naval air is for a specific mission of limited duration, such as the initial massing of air assets in a counterair program, as in Operation DESERT STORM.⁸⁵

Now let us bring this discussion back into the context of operational fires. If the focus of operational fires is primarily interdiction and deep fires, who should control them? JCS Pub 3-03, Doctrine for Joint Interdiction Operations, states: "...the JFC normally will task the Joint Force Air Component Commander (JFACC) with responsibility for the interdiction campaign."⁸⁶ Specifically, the JFACC will have responsibility for the planning, coordination, and direction of the interdiction effort to synchronize interdiction with other operations to avoid fragmented, duplicated, and conflicting efforts.⁸⁷

Two other joint manuals, JCS Pub 5-00.2 and JCS Pub 3-09, recommend that the JFC organize a Joint Targeting Coordination Board (JTCB). The purpose of the JTCB is to coordinate

interdiction and targeting information, provide targeting guidance and priorities, and to prepare and refine joint target lists (JTL).⁸⁸ It is normally chaired by the J-3 or an appointed Joint Force Fire Support Coordinator (JFFSC). As a member of the joint staff, the JFFSC oversees "the development of the joint fires plan concurrent with the development of the overall plan and coordinates interdiction and joint fire support with other members of the joint force staff and other senior and subordinate commands."⁸⁹ The JFFSC cannot rely on an ad hoc committee-type organization like the JCTB to conduct effective target value analysis. The specter of MacArthur's Far East Command's ineffective Targeting Group, an ad hoc group of well-intentioned, but technically unskilled individuals, appears to have been reincarnated as the JCTB. The JFFSC should be augmented with a full-time staff to assist him in developing the fires portion of the campaign plan. Henceforth, I will refer to this staff as the Joint Force Fire Support Element (JFFSE). The JFFSE should be composed of service experts who understand the tactics, techniques, capabilities, needs, and limitations of the component part of the force. Actual positions within the JFFSE should be divided so that representation and influence generally reflect the service composition of the overall force and the character of the contemplated operations.⁹⁰

Who has responsibility for planning, coordinating, and executing operational fires? Is it the JFACC? The JTCB? The JFFSC and his fire support element? Undeniably, unity of effort is enhanced by the designation of a single responsible individual who is vested with the requisite authority to direct and coordinate

all forces in pursuit of a common goal.⁹¹ Clearly the JFACC is in the best position to coordinate and execute these fires. As the owner of most of the attack assets and as the Airspace Control Authority (ACA), the JFACC can directly coordinate with all services requiring airspace clearance. The JFACC tasks sorties of aircraft allocated to it by the JFC's apportionment decision and established command relationships; however, apportionment as currently defined refers only to fixed wing aviation.

Apportionment is a determination by the JFC of the total expected air effort by mission type: counterair, air interdiction, and offensive air support, expressed as a percentage. Allocation is then accomplished by the JFACC. He translates the JFC's apportionment decision into total numbers of sorties, by aircraft type, available for each operation or task.⁹²

The JFACC and his staff, primarily the Combat Plans and Combat Operations Divisions of the Tactical Air Control Center (TACC) are responsible for translating the JFC's mission guidance into specific targets and weapons packages for execution. The TACC is the operational facility through which the JFACC exercises centralized control over the planning, direction, and execution of tactical air resources. It prepares and issues coordinated, detailed orders (Air Tasking Orders) for employing attack resources, and manages the execution of these orders to best meet the JFC's objectives.⁹³ Although the JFACC has liaison from the Army's Battlefield Coordination Element (BCE), and the Naval and Amphibious Liaison Element (NALE), it is predominantly a single service organization like MacArthur's GHQ.⁹⁴

Bradley cautioned against allowing a single service to be solely responsible for the planning, coordination, and execution of operations which are critical to the outcome of a campaign: "The best effect...was obtained when the objectives were jointly selected by air and ground staffs and formed part of a joint plan. Selection of these objectives, or programs, relating thereto, cannot be made the sole responsibility of either the air or ground commander."⁹⁵ If the JFFSC and his JFFSE does their job properly, the JFC's objectives and guidance will reflect an integrated joint effort, and set the stage for efficient coordination of service assets under the direction of the JFACC.

The question still remains, is it asking too much of the JFACC to control the fires of Army attack helicopters, ATACMs, and field artillery systems, as well as, the efforts of special operating forces? The diagram in Appendix B, considerations for employment of operational fires, clearly shows the complex planning required.

This problem has been addressed recently in the Korean Theater of Operations. The Commander in Chief of Combined Forces Command (CFC) has designated the JFACC as the responsible agent for the synchronization of the theater's ground, air, and naval deep fires. CFC also has a Fire Support Branch, a staff section within the J-3 Operations division, which fulfills the duties of the proposed JFFSE.⁹⁶ The bottom line--CFC believes the JFACC can handle the employment of operational fires.

Unlike USAF, USN, and USMC fixed wing aviation, Army attack assets are considered tactical assets organic to a corps, and are not usually retained for use by the JFC. A joint fire support

coordination technique does not doctrinally exist for their employment. However, making a conceptual leap, there are two potential solutions.

The first method is to delineate target areas of responsibility through the use of rear, lateral, and forward boundaries, or phase lines. The JFC establishes fire support coordination measures among component commanders, based upon mutual consent and with due consideration for individual attack asset capabilities. Of particular interest to the army corps commanders is the placement of a joint coordination phase line forward of the Fire Support Coordination Line (FSCL). In NATO, this phase line is called the reconnaissance and interdiction phase line (RIPL). In Korea, it is known as the area of interest (AOI) phase line. This joint coordination phase line is key in delineating the areas of responsibility between corps and JFACC attack assets.⁹⁷ The RIPL (also read AOI) is usually located 80 to 100 kilometers beyond the Forward Line of Own Troops (FLOT). The RIPL marks the corps limit of responsibility for intelligence and planning. Thus, a corps commander nominates interdiction targets on the near side of the RIPL, the operational commander nominates targets beyond the RIPL.⁹⁸ The JFC specifically designates certain mission requirements to the JFACC and corps commanders through mission-type orders, giving each guidance on target priorities, areas of employment, and what the fires are intended to accomplish. The JFACC and corps commanders do their individual planning and coordinate through the BCE and TACC for airspace and target deconfliction. This method does not have a single commander

responsible for the integration of operational fires other than the JFC himself. There is also a danger in that the breakdown of the deep battle into arbitrary areas could create decentralized control of operational fires, thereby reducing their flexibility.

Perhaps a more efficient method would be for the JFC to apportion Army attack assets as the operational situation dictates. The apportionment of other than aircraft should be for a specified mission and a specified duration. The JFACC would designate separate airspace corridors for tactical aircraft, helicopters, and missiles. Tactical aircraft, which take the longest to coordinate and employ, should use whatever corridors offer the most tactical flexibility. The other assets could be employed around them. Therefore, the burden of deconfliction would fall upon the systems with the most flexibility, such as surface to surface missiles.⁹⁹ The JFACC has an existing system to synchronize air operations through the Air Tasking Order (ATO). The ATO tasks units to accomplish specific missions in support of the JFC's objectives and priorities. It provides sufficient detail to enable subordinate elements to execute, such as force packaging, target information, weapons configuration, time-on-target; yet it allows sufficient flexibility to meet the evolving operational situation.¹⁰⁰ With JFC authority to task attack assets from the other services, the JFACC could employ a Joint Air Tasking Order (JATO, my term) to synchronize land, sea, and air fires in time and space, thereby unifying the interdiction effort. This method is not possible if control of all operational fires assets are not placed in the hands of the JFACC.

Aggressive Intelligence. Intelligence plays a major role during the execution of operational fires. Effective targeting requires the most efficient use of scarce intelligence assets. The joint force plan for target acquisition is predicated upon the JFC's guidance as an extension of his concept of the operation. In conducting an intelligence estimate, the joint force staff identifies vulnerable enemy functions, which if attacked will help destroy or weaken the enemy center of gravity. Aggressive intelligence allows the joint force to detect, identify, and locate these targets with sufficient accuracy and timeliness to permit their attack. For example, the APACHE helicopter can be employed 150 kilometers beyond the FLOT on deep attacks. Since the planning for this mission begins 72 hours prior to its execution, one can appreciate the requirement for intelligence collection at least 200 to 300 kilometers into enemy territory. Currently, the corps does not possess intelligence assets (radar, signals intelligence, and human intelligence) capable of satisfying the corps' deep battle needs. The JFACC has constant access to long range intelligence assets which are invaluable to accurate target acquisition.

Information derived from collection, reconnaissance, and surveillance from all service sources must be swiftly channeled to the appropriate delivery system for engagement.¹⁰¹ The demands of a fluid and rapidly changing situation may, however, dictate intelligence based on combat information, rather than on a refined and finished product. In a recent example, Allied fighter bombers and US Army ATACMS were kept on strip alert to attack Iraqi SCUD transporter-erector launchers (TELs) once they were detected either

by satellite imagery or by their launch signature.

Aggressive intelligence also provides up-to-date information that indicates how the enemy is adapting (as in the case of interdiction) and aids the analyst in assessing the effectiveness of operational fires on the campaign. A system must be developed to ensure that the desired effects have been achieved. Intelligence assets must be focused on the target to conduct battle damage assessment (BDA) to see if the JFC's attack guidance was met. For example, enemy countermeasures in Korea are largely credited with the failure of Operation STRANGLE. The NKPA built multiple bypass routes to decrease the effectiveness of bridge destruction. The NKPA were able to repair key bridges in an average of two days, while in Europe such bridges required several weeks, if ever repaired. Underwater bridges and removable bridge spans prevented detection from reconnaissance. NKPA convoys were reduced to four or five vehicles moving primarily at night. Even if they were attacked, the overall effect on the supply system was negligible.¹⁰² Had intelligence assets been more focused to detect NKPA countermeasures, specific high priority targets could have been more effectively engaged to deny their use to the enemy.

Timely Effect. Planning and execution of operational fires must also permit the timely and effective engagement of targets. Through proper coordination and synchronization, targets are engaged at the proper time and place, by the most appropriate means, to achieve the desired effect.¹⁰³ To be proactive in anticipating when and where the massing of attack assets will have the greatest effect, the JFFSE, working closely with the J-3/J-5,

jointly develops a decision support template (DST). The DST is used to identify critical events and threat activities, relative to time and space enabling, the JFC to make timely operational decisions.¹⁰⁴ These decisions involve concentrating combat power for both close operations and the delay, weakening, or destruction of enemy follow-on forces through deep operations.

Decision support templating identifies those areas or enemy capabilities where significant events or high value targets are expected to appear. The areas where the JFC can influence the action through fire and maneuver are referred to as target areas of interest (TAIs).¹⁰⁵ TAIs provide the engagement areas which will best support successful interdiction through operational fires. The JFFSE recommends the optimum attack resource in terms of capability, quantity, and time when it should be employed. These recommendations also form a basis for the JFC's apportionment and subsequent allocation by the JFACC. The process of identifying TAIs is a joint effort between the intelligence, operations, and JFFSE staffs. It is also an aid to synchronize operational fires and their associated intelligence requirements with the scheme of maneuver, thus ensuring unity of effort.

V. Conclusions and Implications

As Clausewitz postulated 120 years before the potential of air power was fully realized, attacks on infrastructure and logistics will not of themselves be decisive. They should be regarded as a means of gaining greater superiority--to establish the conditions leading up to a decisive battle. Operations DIADEM,

OVERLORD, and COBRA demonstrated the utility of operational fires when executed in conjunction with ground maneuver. Operation STRANGLE in both Italy and Korea showed the futility of executing operational fires in isolation of ground activity. Therefore, operational fires and maneuver are complementary and integral to the practice of operational art through campaign design.

Like operational art, operational fires are less concerned with the current tactical battle and attempt to set the conditions for future battle. They are most effective when planned as a fully integrated component of the JFC's operational concept, intended to achieve a specified, operationally significant result. Bradley and Quesada resolved the problem of joint planning early in the Normandy campaign by essentially creating a joint staff which was collocated. Both commanders were intimately involved in ensuring the unity of effort between air and ground activities. By contrast, in Korea the failure to develop a true joint staff resulted in poor planning and execution of fires, exacerbated by MacArthur's apparent lack of command involvement and mission focus.

Without question, the first priority of air power must be to achieve air superiority. Warden points out that air superiority is a prelude to military victory and no country has lost a war while it maintained air superiority. Further, he states that all operations must be subordinated, to the extent possible, to its attainment.¹⁰⁶ Air superiority is generally thought to be a prerequisite for the execution of operational fires.

As technology advances, there will be more and more weapons systems developed and fielded allowing the simultaneous execution

of operational fires and counterair operations. The challenge is to effectively plan and coordinate the effort between the different delivery means, as well as, deconflict the airspace. Planning for the integration of operational fires, in a broad sense, is best accomplished by a Joint Force Fire Support Coordinator, assisted by a fire support element. The JFFSC would recommend to the JFC how attack and intelligence resources should be allocated within the operational concept. The JFFSE would be a permanent entity and fulfills the intended functions of the JTCB. This allows the JFFSE to build the warfighting skills and cohesion necessary to fully develop the JFC's guidance and intent for the desired and necessary impact of operational fires. Additionally, the JFFSE ensures the thorough integration of fires within the overall concept of the operation through joint planning with the J-2 and J-3. Together, through the use of a decision support template, they decide what the fires are to achieve and when the fires will be used in order to maximize their effects. The JFFSC and the JFFSE refine the stated objectives into prioritized high-payoff targets and establish attack guidance for the JFC's approval.

The attack guidance and high-payoff target list (previously referred to as a joint target list) is then passed to the JFACC for coordination and tasking of service assets, as well as, the supervision of the execution. The JFACC already has a C³I system in place for the control of service air assets. Coordination is accomplished with the use of an Air Tasking Order. The ATO formally tasks assets to accomplish specific missions and provides sufficient detail for execution, while allowing sufficient

flexibility and initiative to meet the evolving operational situation. It remains to be determined, however, how the tasking will occur for surface delivery means, such as, attack helicopters, ATACMS, and sea-launched TOMAHAWK cruise missiles. I recommend the use of a joint air tasking order which ensures deconfliction of attack resources and airspace.

This concept is predicated upon the JFACC receiving the authority from the JFC to task service attack assets in-support-of. Unity of effort is enhanced by the designation of a single individual who is vested with the requisite authority to direct and coordinate all efforts concerned with the application of operational fires. This individual should be the JFACC, although he must receive clear guidance from the JFC as developed in sufficient detail by the JFFSE to ensure the integration of operational fires within the overall operational concept.

Another problem which must be addressed is the conduct of training for joint staffs. The potential lethality, intensity, and chaos of the modern battlefield will not allow time to polish skills, to develop new procedures and techniques, or to develop new organizational structures once hostilities commence. Therefore, the successful application of operational fires must be worked out in advance, through realistic scenarios which exercise the entire system from staff planning through execution.¹⁰⁷ This lends more credence to the need for a permanently staffed JFFSE.

The successful employment of operational fires in the Persian Gulf, like the Battle of Crecy, established the preconditions for successful ground maneuver. Technological developments in delivery

means, precision munitions, command and control, and accurate target acquisition, demonstrate that operational fires may move from a supporting role to become a more decisive element of combat power. This role reversal is prophesied in the Army's AirLand Battle-Future (ALB-F) concept. In ALB-F, the operational commander establishes a detection zone using sophisticated sensors and intelligence systems to develop the enemy situation, conduct target development, and position forces in preparation to engage the enemy with fires. Next, all fire assets available are used to destroy enemy forces at extended ranges. Following the execution of deep fires, maneuver forces are committed to attack, exploit, and pursue to complete the destruction of the disjointed enemy. Fires continue to support well forward of the advancing ground forces.¹⁰⁸

As joint doctrine evolves to embrace various concepts posited by ALB-F--greater reliance on operational fires as a means to establish the conditions for decisive maneuver, unity of effort is absolutely essential for the proper application of combat power. Unity of effort means that operational fires are fully integrated as a separate component of campaign design. This requires the focused attention of a dedicated staff--the joint force fire support element. Unity of effort must also occur during the execution of operational fires. The JFC must appoint a single commander vested with the authority to task, coordinate, and control all attack assets in pursuit of operational objectives--the JFACC being the most likely candidate. In such a way, the difficulties encountered in the Kasserine Pass, Operation STRANGLE, Operation COBRA, and MacArthur's Far East Command can be overcome.

ENDNOTES

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2. William J. Rice, "Operational Fires--What's In a Name?" (Fort Leavenworth, KS: School of Advanced Military Studies, U.S. Army Command and General Staff College, 7 June 1990), p. 38.
3. TRADOC Pam 11-9, Blueprint of the Battlefield (Fort Monroe, VA: HQ US Army Training and Doctrine Command, 27 April 1990), pp. 12-13.
4. Joint Chiefs of Staff Test Pub 5-00.2, Joint Task Force (JTF) Planning Guidance and Procedures (Washington, D.C.: 15 June 1988), p. II-12.
5. Joint Chiefs of Staff Pub 3-09, Doctrine for Joint Fire Support Operations (Final Draft) (Washington, D.C.: February 1991), p. I-17.
6. Ibid., pp. I-3 to I-5.
7. The discussion on the relevance of Sun Tzu's concept of fires is taken from Rice, pp. 5-6. The quotation is from Sun Tzu, The Art of War, translated by Samuel B. Griffith (New York: Oxford University Press, 1963), p. 141.
8. Rice, pp. 5-6.
9. Ibid., p. 4.
10. Carl von Clausewitz, On War, edited and translated by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984), p. 181.
11. Ibid., p. 99.
12. FM 100-5, Operations (Washington, D.C.: HQ Department of the Army, May 1986), p. 10.
13. JCS Pub 3-0, Doctrine for Unified and Joint Operations (Washington, D.C.: January 1990), p. xii.
14. FM 100-5, p. 11.
15. Ibid., p. 12.
16. Ibid., p. 12.

17. FM 100-6, Large Unit Operations (Coordinating Draft) (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 30 September 1987), p. 4-9.
18. Ibid., p. 4-3.
19. B.H. Liddell Hart as cited by Sterling R. Richardson, "The Normandy Campaign: Firepower at the Operational Level." (Fort Leavenworth, KS: School of Advanced Military Studies, U.S. Army Command and General Staff College, 15 May 1987), p. 6.
20. B.H. Liddell Hart, Thoughts on War (London: Keegan, Paul, Trench, Trimmer & Co. Ltd., 1925, p. 66.
21. Ibid., p. 66.
22. Ibid., p. 172.
23. Giulio Douhet, The Command of the Air, in the USAF Warrior Studies, translated by Dino Ferrari and edited by Richard H. Kohn and Joseph P. Harahan (Washington, D.C.: Office of Air Force History, 1983), p. 51.
24. This quotation reflects the theory of industrial bombardment proposed by the Air Corps Tactical School in 1939. It is taken from Barry D. Watts, The Foundation of U.S. Air Doctrine: The Problem of Friction in War (Maxwell Air Force Base, AL: Air University Press, December 1984), p. 18.
25. Richardson, pp. 10-11.
26. Von Sandrart as cited by Rice, p. 14.
27. Ibid., p. 15.
28. Rogers as cited by Rice, p. 14.
29. JCS Pub 3-09, p. I-1.
30. The first three tasks were taken from a discussion on operational fires in FM 100-6, p. 3-14. JCS Pub 3-09, p. III-1, states that joint fires generally focus on four general tasks. To the three tasks previously mentioned, it adds a fourth, protecting portions of the area of operations.
31. Harold T. Gonzales, Tactical Air Support of Ground Forces in the Future, Research Report Number AU-ARI-89-7 (Maxwell Air Force Base, AL: Air University Press, May 1990), pp. 25-27.
32. BG Paul M. Robinett, Commanding General of Combat Command B, 1st Armored Division, as cited by Gonzales, p. 28.

33. William W. Momyer, Air Power in Three Wars (Washington, D.C.: US Government Printing Office, 1978), p. 40.
34. FM 100-20 as quoted by Gonzales, p. 31.
35. Paraphrased from a direct quotation from FM 100-20 in Gonzales, p. 29.
36. The priorities of air force missions which follow are paraphrased from a direct quotation from FM 100-20 in Gonzales, p. 32.
37. Price T. Bingham, "Ground Maneuver and Air Interdiction in the Operational Art," Parameters (March 1989), p. 19.
38. John A. Warden III, The Air Campaign: Planning for Combat (Washington, D.C.: National Defense University Press, 1988), p. 89.
39. Bingham, p. 20.
40. Bingham, p. 20.
41. Warden, pp. 89-90.
42. E.J. Kingston McCloughery, The Direction of War, as cited by Momyer, p. 165.
43. B. H. Liddel Hart, The Rommel Papers, cited by Bingham, p. 27.
44. Russell F. Weigley, Eisenhower's Lieutenants (Bloomington, Indiana: Indiana University Press, 1981), p. 151.
45. Ibid., p. 151.
46. Ibid., p. 152.
47. Ibid., p. 153.
48. Ibid., pp. 161-162.
49. Ralph F. Stearley, Robert M. Lee, and James C. McGehee, "The Tactical Air Force in the European Theater of Operations," Study Number 54 (The General Board, United States Forces, European Theater, 1946), p. 11.
50. Jacob E. Fickel, The Effectiveness of Third Phase Tactical Air Operations in the European Theater, 5 May 1944--8 May 1945. (The Army Air Forces Evaluation Board in the European Theater of Operations, 20 August 1945), pp. 119-120.

51. Omar N. Bradley, Effect of Air Power on Military Operations Western Europe (Air Effects Committee 12th Army Group, 11 August 1945), Plate 2 and Plate 3.
52. Roger F. Kropf, "The US Air Force in Korea: Problems that Hindered the Effectiveness of Air Power," Airpower Journal (Spring 1990), pp. 30-31.
53. Robert F. Futrell, The United States Air Force in Korea 1950-1953, revised edition (Washington, D.C.: Office of Air Force History, 1983), p. 693.
54. Kropf, p. 31.
55. Momyer, p. 54.
56. Futrell, p. 52.
57. Kropf, p. 33.
58. Ibid., p. 37.
59. Ibid., p. 38.
60. Futrell, p. 261.
61. Ibid., pp. 440-441.
62. Gregory A. Carter, Some Historical Notes on Air Interdiction in Korea (Santa Monica, CA: The RAND Corporation, September 1966), p. 4.
63. Futrell, p. 704.
64. Mark Perry, Four Stars (Boston: Houghton Mifflin Company, 1989), p. 339.
65. Definition of synchronization comes from FM 100-5, p. 17.
66. JCS Pub 3-09, p. II-3 to II-5.
67. Rice, p. 38.
68. JCS Pub 3-09, p. III-3.
69. Ibid., p. II-3.
70. Fickel, p. 339.
71. Ibid., p. 343.
72. William S. Lind, Maneuver Warfare Handbook (Boulder, CO: Westview Press, 1985), p. 13.

73. TRADOC Pam 525-45, General Operating Procedures for Joint Attack of the Second Echelon (J-SAK) (Fort Monroe, VA: HQ U.S. Army Training and Doctrine Command, 31 December 1984), p. 1-4.

74. Thus far, references to air-ground cooperation in the European Theater of Operations have involved the 12th AG and 9th TAC. The interdiction effort for the invasion of Normandy was executed on a much larger scale. It was jointly planned at SHAEF HQs and executed by Allied Expeditionary Air Forces (AEAF) which included both the 8th and 9th Tactical Air Forces. Study Number 54, pp. 9-10.

75. Ralph F. Stearley, Robert M. Lee, James C. McGhee, "Air Power in the European Theater of Operations," Study Number 56. (The General Board, United States Forces, European Theater, 1946), p. 12.

76. Bradley, pp. 59-60.

77. This is a paraphrase of a direct quotation which better captures the context of Patton's intent. The actual quotation in Fickel, p. 119, is "Do not blow up any bridges."

78. JCS Pub 3-09, p. I-4.

79. Joint Chiefs of Staff Pub 1-02, Unified Action Armed Forces (UNAAF), with Change 1 dated 21 April 1989 (Washington, D.C.: 1 December 1986, pp. 3-8, 3-37 to 3-38.

80. JCS Test Pub 3-0, p. II-1.

81. Ibid., p. II-2.

82. Charles O. Hammond, "Operational Fires and Unity of Command," (Fort Leavenworth, KS: School of Advanced Military Studies, U.S. Army Command and General Staff College, 29 June 1990), p. 30.

83. Ibid., p. xi.

84. TACP XX-XX, Joint Force Air Component Commander (JFACC) Concept of Operations (Final Draft) (Langley Air Force Base, VA: HQ Tactical Air Command, 13 September 1990), pp. 5 and 9.

85. In-support-of is defined as "assisting or protecting another formation, unit, or organization while remaining under original control." Thomas A. Cardwell, Command Structure for Theater Warfare: The Quest for Unity of Command (Maxwell Air Force Base, AL: Air University Press, September 1984), p. 35.

The policy of the control of Marine aviation in joint operations is much less clouded. Organizationally, the United States Marine Corps employs the Marine Air Ground Task Force (MAGTF) to execute its doctrine. The MAGTF is uniquely equipped to perform a flexible variety of tactical actions and jealously guards its air assets, since the MAGTF's organic aviation allows the commander to

specifically project power in advance of an amphibious assault, or to shape associated events in time and space. This does not mean that Marine aviation is for the exclusive use of the MAGTF.

During joint operations, the MAGTF air assets will normally be in support of the MAGTF mission. The MAGTF commander will make sorties available to the Joint Force Commander, for tasking through his Air Component Commander, for air defense, long-range interdiction, and long-range reconnaissance. Sorties in excess of MAGTF direct support requirements will be provided...for the support of other components of the joint force, or of the joint force as a whole.

The policy also states that the JFC exercises OPCON of all assigned Marine forces, which includes air assets. Therefore, the JFC can assign missions and redirect efforts, such as the reapportionment or reallocation of any MAGTF air sorties when they are required for higher priority missions. Taken from JCS Test Pub 500.2, pp. IV-2 to IV-3.

86. Joint Chiefs of Staff Pub 3-03, Doctrine for Joint Interdiction Operations (Initial Draft) (Washington, D.C.: June 1989), p. IV-3.

87. Ibid., p. IV-2.

88. CS Pub 5-00.2, p. D-A-4 and JCS Pub 3-09, p. I-17.

89. JCS Pub 3-09, p. II-2.

90. JCS Pub 1-02, pp. 3-36 to 3-38.

91. FM 100-5, p. 176.

92. TAC Regulation 55-45, Tactical Air Force Headquarters and the Tactical Air Control Center. (Langley Air Force Base, VA: HQ Tactical Air Command, 8 April 1988), pp. 2-1 to 2-2.

93. Ibid., pp. 4-1 to 4-2.

94. The BCE is established by the Land Component Commander and is collocated with the TACC. The BCE processes land force requests for tactical air support, usually limited to BAI and CAS requests, monitors and interprets the ground situation for the TACC, and provides the necessary interface for the exchange of current operational and intelligence data. FM 6-20, Fire Support in the AirLand Battle (Washington, D.C.: HQ Department of the Army, 17 May 1988), p. 2-2.

The USN/USMC's NALE is also located at the TACC to monitor and interpret the naval and amphibious situation for the TACC. TACR 55-45, p. 4-4.

95. Bradley, p. 194.
96. Memorandum for Commander Air Component Command, "Synchronization of Deep Fires," HQ Combined Forces Command, 5 December 1989, p. 1.
97. Corps Deep Operations: Tactics, Techniques, and Procedures Handbook - (1990) (Fort Leavenworth, KS: HQ Combined Arms Center, April 1990), p. 2-7. Doctrinally, the FSCL is established by a ground commander, usually at corps level, typically 15-25 kilometers forward of the FLOT. It is used to coordinate the fires of air, ground, or sea against surface targets. Supporting elements may attack targets forward of the FSCL without prior coordination with the ground commander, however, attacks against surface targets short of the FSCL must be coordinated. JCS Pub 3-09, p. D-8.
98. Thomas G. Runge, Firepower and Follow-On Forces Attack: Making Every Round Count (Maxwell Air Force Base, AL: Air University Press, March 1991), p. 7.
99. Ibid., pp. 80-81.
100. TACR 55-45, p. 6-1.
101. JCS Pub 3-09, p. I-4.
102. Carter, pp. 13-14, 16.
103. JCS Pub 3-09, pp. II-4 to II-5.
104. The concept of a decision support template (DST) is purely an Army concept. However, in my opinion, it has utility at the operational level as a decision aid to the JFC and his planning staff. The DST is discussed in Student Text 100-9, The Command Estimate (Fort Leavenworth, KS: U.S. Army Command and General Staff College, July 1989, p. 7-34.
105. Ibid., p. 7-34.
106. Warden, p. 13 and 17.
107. JCS Pub 3-03, p. V-8.
108. USACGSC Director's Read Ahead Packet, AirLand Battle - Future (Fort Leavenworth, KS: Combined Arms Center, 1 June 1990), pp. 12-17.

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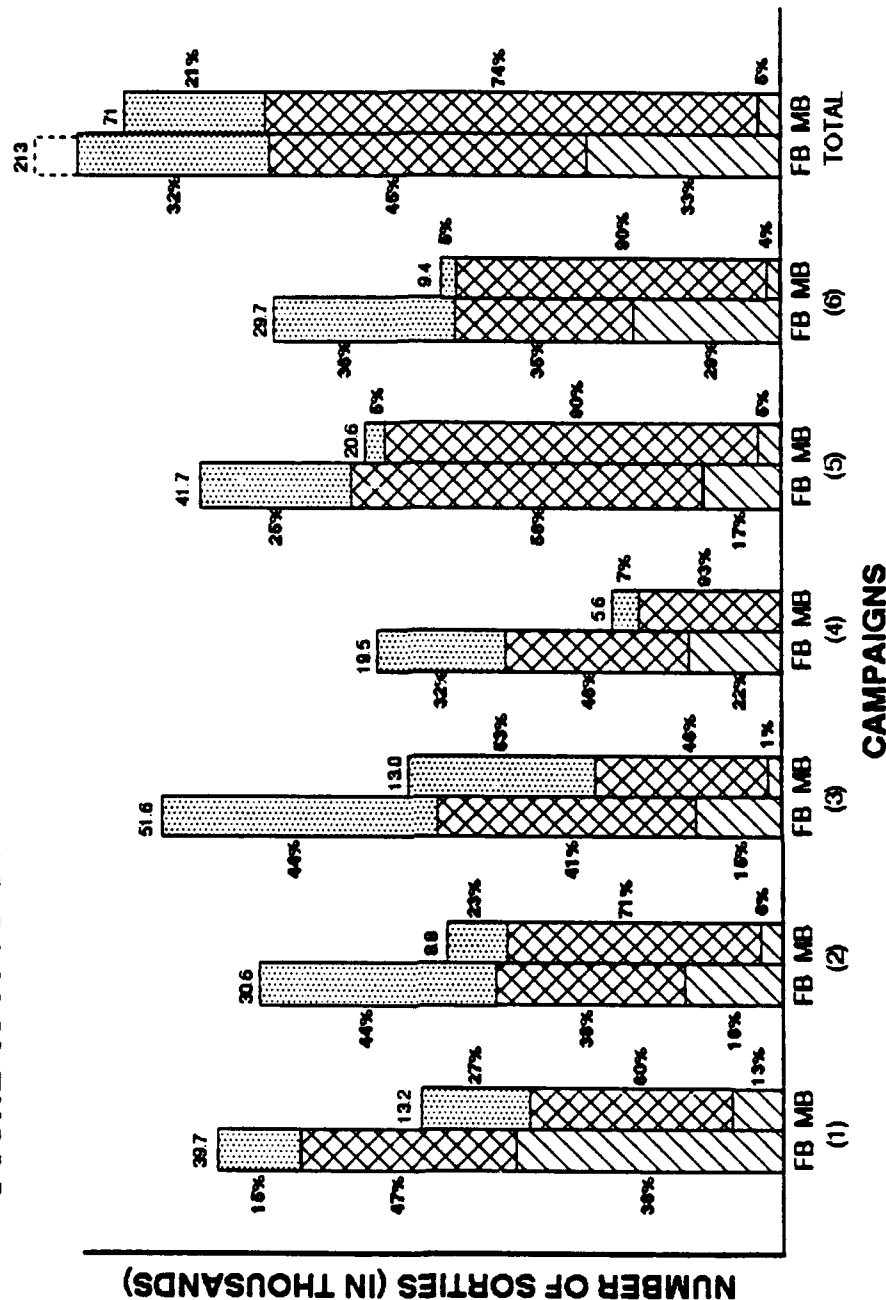
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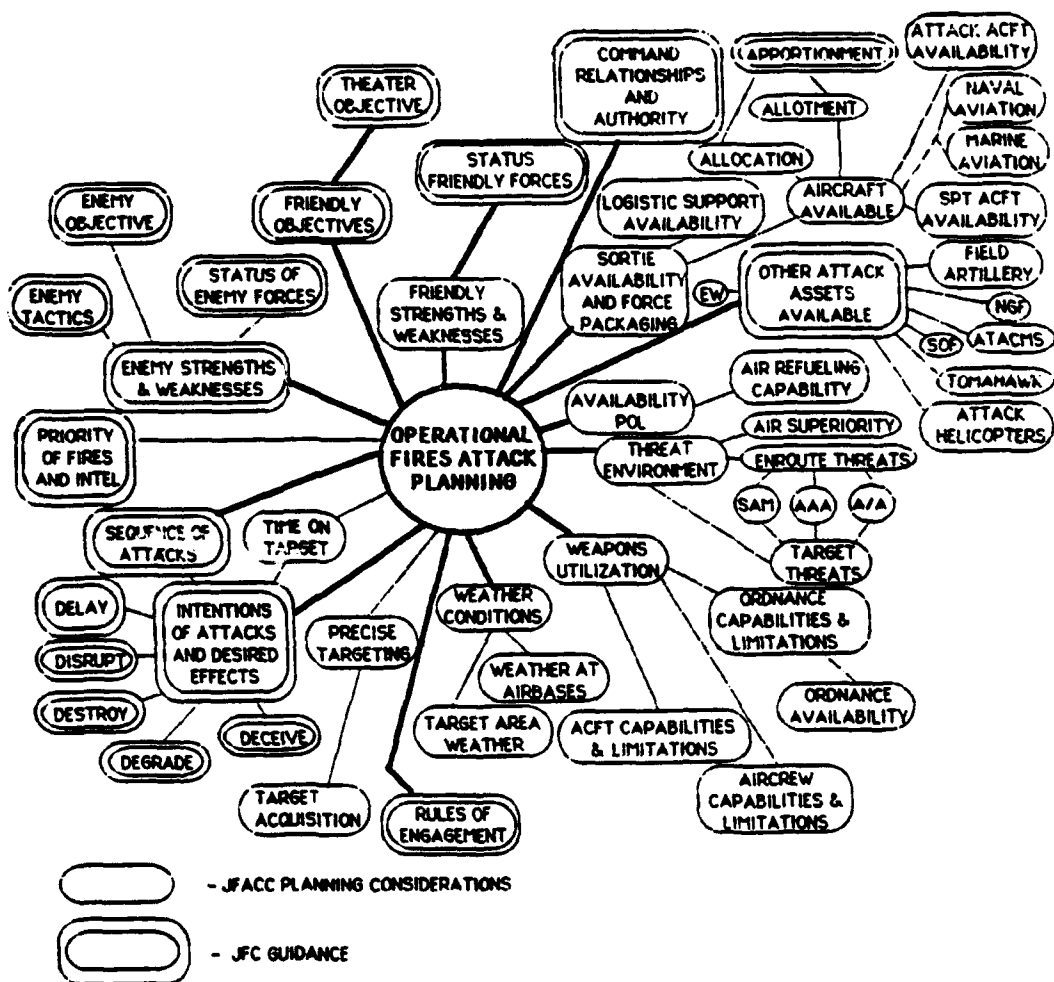
ANNEX A: 12TH (US) AG AND IX TAC AF AIR-GROUND COOPERATION: FIGHTER BOMBERS (FB) & MEDIUM BOMBERS (MB) 6 JUNE 1944 TO 8 MAY 1945



KEY TO CAMPAIGNS

- (1) NORMANDY, 6 JUN - 24 JUL
- (2) WESTERN FRANCE & BRITTANY, 25 JUL - 26 AUG
- (3) EASTERN FRANCE/SIEGFRIED LINE, 27 AUG - 16 DEC
- (4) ARDENNES, 27 AUG - 16 DEC
- (5) WEST OF THE RHINE RIVER, 29 JAN - 24 MAR
- (6) EASTERN GERMANY, AUSTRIA, & CZECH, 25 MAR - 8 MAY

SOURCE: Effect of Air Power on Military Operations in Western Europe, Air Effects Committee, 12th Army Group, 11 August 1945, Plates 2 & 3
Based on a study of IX Tactical Air Force Daily Summaries of Operations. Numbers are correct, bar graphs not to scale.



ANNEX B: PLANNING CONSIDERATIONS FOR THE EMPLOYMENT OF OPERATIONAL FIRES
 (SOURCE: ADOPTED FROM TAC REGULATION 55-45, P. 4-6)